REMARKS

Reconsideration of the rejections set forth in the Office Action dated July 10, 2007, is respectfully requested. By this Amendment, claims 1, 7, and 16 have been amended. Currently, claims 1-20 are pending in this application.

Objection to drawings

The Examiner objected to figures 1-7 for lacking descriptive text labels. Applicants submit herewith proposed changes to the drawings to add the requested text labels. These drawing changes do not add new matter. The Examiner is respectfully requested to approve the drawing changes when acting on this amendment.

Rejection under 35 USC 102(e)

Claims 1-6 and 16-20 were rejected under 35 USC 102 as anticipated by Li et al. (U.S. Patent Publication No. 20040174825). This rejection is respectfully traversed in view of the amendments to the claims and the following arguments.

This application relates to a way to control the dissemination of routing information in a communication network. Link state routing protocols such as IS-IS or OSPF allow network elements to exchange routing information by transmitting link state advertisements. IS-IS and OSPF work well in small networks. Unfortunately, as the networks increase in size the overhead associated with exchanging LSAs between a large number of network devices may become prohibitive. (Specification at par. 9).

One known way to allow OSPF or IS-IS to operate in a large network was to partition the network into smaller administrative areas, and cause the flooding of LSAs to stop at the network area borders. (Specification at par. 10). This required nodes to be assigned to network areas and for other nodes to be designated as border area routers. While partitioning the network works well in a conventional network with fixed nodes, it is difficult to implement in an ad-hoc network where the nodes are not fixed and, indeed, not intentionally placed by the network administrator. (Specification at par. 13).

Applicants proposed to eliminate the network area concept and instead limit the flooding radius of LSAs so that each LSA will flood a particular distance and then no longer be forwarded by the nodes on the network. This provides several unexpected benefits. First, since the

dissemination of LSAs on the network is not tied to the concept of areas, it is no longer necessary to name the particular areas of the network and to designate nodes as belonging to one of the areas. This simplifies administration of an ad-hoc network since the network administrator does not need to create network areas, assign nodes to network areas, or update the assignment as nodes are deployed or move within or between network areas. (Specification at par. 28). This allows ad-hoc nodes to be added to a network without implementing a centralized management structure.

Applicants have amended independent claim 1 to recite that forwarding of link state advertisements occurs based on distance information contained in the LSA, without regard to the identity of the network element that initiated the LSA. This reflects the idea that the network is not administratively partitioned since LSA forwarding is not based on source address but rather is based only on the distance information contained in the LSA. This is not shown in Li. As discussed in greater detail below, Li teaches the use of LSAs that contain a time to live field. However, the nodes do not make a forwarding decision based only on this field. Rather, Li partitions the network into flooding groups. The nodes in the flooding group then look at the origin of the LSA when determining whether to flood the LSA within the flooding group or out of the flooding group.

Li teaches a Link-State Proxy Flooding Protocol (LSPFP) that uses Link State Advertisements (LSAs) that include a Time To Live (TTL) field. (Li at Par. 43-45). Specifically, the TTL-sub-field of the LSAs in Li's protocol allow the number of hops a LSA may travel to be specified, which allows a flooding radius to be specified for a LSA. (Id.).

Li failed to recognize, however, that the flooding of LSAs could be implemented in this manner alone. Rather, in Li, the network elements on the network first look to determine if the LSA is related to their group. This is akin to forwarding LSAs only within defined network areas. Applicants have amended the claims to recite a new use of this LSA. As is well established, a new use of an old article may be patentable where the new use is not taught or suggested in the prior art, and not inherently performed in the prior art. (See MPEP 2113). As set forth below, Li did not teach or suggest using the TTL field alone to limit dissemination of LSAs in a network. Accordingly, the claims as amended are patentable over Li.

In Li, there are two network tiers. On the lower layer, there are flooding groups. Within each flooding group (FG) there is a node that is selected as the flooding proxy (FP). All other

nodes within the flooding group are flooding group members (FGM). In the upper tier, the flooding proxies are all linked by main flooding paths. (See Li at Paragraph 33). When a FP receives a LSA, it will look at the status field to determine if the LSA is GLOBAL or LOCAL. If the LSA is global, it will be sent to the other FPs over the main flooding paths in the upper tier). If the LSA is local, it will be maintained within the flooding group. (Li at Par. 43).

The flooding protocol described by Li (LSPFP) specifies two ways in which network nodes should behave, depending on whether the node is a Flooding Proxy, or a Flooding Group Member. (Li at Par. 35). Figs. 5-6 and 9 show methods executed by the FGM, and Figs. 7-12 show methods executed by a FP. (Li at Par. 62). A review of each of these figures and the corresponding text reveals that the first inquiry, in each case, is where the LSA originated. The TTL field is used to limit the radius of flooding, but is not by itself used to determine whether the LSA should be flooded in the first instance. Thus, in Li, the network element will first determine based on the source of the LSA if the LSA should be flooded, and if the LSA is to be further flooded, the network element will then look at the TTL field to determine if it is permissible to continue to flood the LSA. Accordingly, the TTL field is used as a check on flooding rather than being used in the first instance to determine if the LSA should be flooded by the network element.

- Fig. 5 Li at Pars. 63-66. This Fig. deals with sending a LSA from a FGM to a FP, and thus doesn't address how a LSA is received.
- Fig. 6, Li at Par. 67: This Fig deals with receiving a LSA by a FGM. Li specifies that the FGM looks at where the LSA came from and states: "If the received LSA packet is not from its own FP, the method branches to step 49 and exits."
- Fig. 7, Li at Par. 69-70. This Fig. deals with sending a new LSA from a FP into the network, and thus doesn't address how a LSA is received.
- Fig. 8, Li at Par. 71-75. This Fig. deals with how a FP receives a LSA. If a LSA is not sent point to point (i.e. addressed to the FP) and the sender is not a FP neighbor, the method will exit. (Par. 71). Both of these require the FP to look at where the LSA came from.
- Fig. 9, Li at Par. 68. This Fig. is a continuation of Fig. 8 and shows how a FP acknowledges receipt of the LSA.
- Figs. 10-13 address flooding of LSAs, and do not appear to be related to receiving LSAs.

As set forth above, there really are only two figures in Li (Figs. 6 and 8) that show how a network element receives a LSA. As taught by Li in connection with these figures, both the FP and the FGM both look at the address of where the LSA came from to determine whether to reflood the LSA. For the focal point (FP), it will look to see if the LSA is point to point addressed to it or, if the LSA has been broadcast from another FP, whether it is on the list of nodes that have not yet acknowledged the LSA. A FGM, on the other hand, will look to see if the node that sent the LSA is its FP. In either instance, the network element will not reflood the LSA if the LSA came from an incorrect address. This requires the use of administrative boundaries in the network and requires the FGMs to be configured with a designated FP. Although Li teaches that the flooding may be bound to not exceed a particular number of hops, Li does not teach that the TTL field should be used alone to determine whether a LSA should be flooded on the network.

Applicants have amended claim 1 to recite that forwarding of a LSA occurs based on the distance information without regard to an identity of a network element that initiated the link state advertisement. Similar amendments have been made to independent claim 16. As described above, forwarding LSAs on the network based only on the time to live or other distance information, without regard to the identity of the entity that transmitted the LSA allows a link state routing protocol to be implemented in a network without requiring areas to be defined in the network. This solution and the advantage associated with the solution are both not discussed in Li, since Li teaches the establishment of network areas (focal groups including focal group members associated with a focal point) and Li also teaches that LSAs should be flooded based on identity of the node that originated the LSA rather than on the TTL field alone. Accordingly, applicants respectfully submit that the method recited in claim 1 and that the network element configured to perform the claimed method of claim 16 were not taught or suggested by Li. Applicants respectfully submit that the amended claims are patentable over Li and, accordingly, respectfully request that the rejection under 35 USC 102 be withdrawn.

Rejection under 35 USC 103

Claims 7-15 were rejected under 35 USC 103 as unpatenable over Li in view of Kwaitkowski (U.S. Patent Application No. 2004/0120355). The Examiner cited Kwaitkowski as showing a plurality of OSPF routers. Applicants have amended claim 7 in a manner similar to

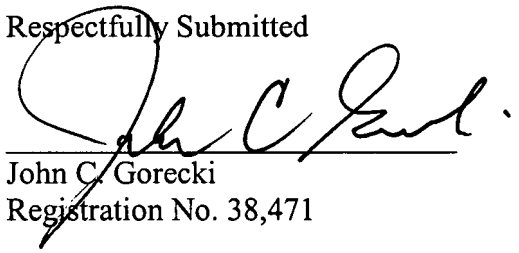
that of claim 1. In view of the deficiency noted above with respect to Li, applicants respectfully submit that amended claim 7 is not obvious in view of Li and Kwaitkowski. Accordingly, applicants respectfully request the Examiner to withdraw the rejection of claims 7-15 under 35 USC 103.

Conclusion

In view of foregoing claim amendments and remarks, it is respectfully submitted that the application is now in condition for allowance and an action to this effect is respectfully requested. If there are any questions or concerns regarding the amendments or these remarks, the Examiner is requested to telephone the undersigned at the telephone number listed below.

If any fees are due in connection with this filing, the Commissioner is hereby authorized to charge payment of the fees associated with this communication or credit any overpayment to Deposit Account No. 502246 (Ref: NN-16258).

Respectfully Submitted



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